

December 1, 2005

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE -- PNO-RIII-05-016

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region III staff on this date.

Facility

Braidwood 1 and 2
Exelon Generation Co.
Braceville, Illinois
Docket: 50-456 and 50-457
License: NPF-72; NPF-77

Licensee Emergency Classification

☐ Notification of Unusual Event
☐ Alert
☐ Site Area Emergency
☐ General Emergency
☒ Not Applicable

SUBJECT: POTENTIAL OFF-SITE MIGRATION OF TRITIUM CONTAMINATION

DESCRIPTION:

On November 30, 2005, the licensee informed the resident inspectors and Region III (Chicago) that elevated levels of tritium (the radioactive isotope of hydrogen) had been measured in groundwater on the Braidwood site and that the tritium may have moved in groundwater off the site.

The licensee believes that the tritium in the groundwater is a result of past leakage from a pipe which normally carries non-radiation circulating water discharge to the Kankakee River, about five miles from the site. Significant leakage occurred from the pipe in November 1998 and December 2000, flooding a portion of the plant site with an estimated 3 million gallons of water in each occurrence. A small leak of a few gallons also occurred in May 2005.

The discharge pipe is also used for planned liquid radioactive effluent releases with the effluent mixing with the non-radiation circulating water being discharged. (Braidwood, like most nuclear plants, releases small concentrations of radioactive liquids under controlled and monitored conditions and within limits imposed by the NRC.) Planned releases were made at the time the leakage occurred in 1998 and 2000 which accounts for the presence of tritium in the groundwater. There have been no planned releases from the plant which exceeded NRC discharge limits.

The licensee has measured tritium levels in shallow onsite monitoring wells as high as 58,000 picocuries per liter. This level of tritium, if released from the site, would be a small fraction of NRC limits for radioactive effluent releases to the environment.

In the vicinity of the onsite monitoring wells where elevated tritium levels have been measured, there are three homes and a larger parcel of vacant land with undeveloped lots. The licensee believes the movement of the groundwater is away from the homes and toward the vacant

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property. The licensee has contacted the homeowners and collected well water samples to be analyzed by an independent laboratory. The licensee is also drilling monitoring wells on the vacant site. The initial sample results are expected to be available on December 2, 2005.

The licensee has notified local officials and the State of Illinois of the elevated tritium measurements. The licensee is also planning to issue a news release.

Region III has dispatched a radiation specialist to the site to assist the resident inspectors in their review of the circumstances surrounding the elevated measurements and the licensee's plans to address the elevated tritium levels.

Region III was notified of the elevated measurements on November 30, 2005. The information in this preliminary notification has been reviewed with licensee management and is current as of 3:30 p.m. on December 1, 2005.